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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/645,289

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EXAMINER

CURS, NATHAN M

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 09/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/645,289	Applicant(s) KIM ET AL.	
	Examiner Nathan Curs	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5 and 7-16 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 6 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/03, 3/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the modified pseudo-noise code". There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites the limitation "the optical FBG filters". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 4, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Izadpanah (US Patent Application Publication No. 2004/0018018).

Regarding claim 1, Izadpanah discloses an optical Code Division Multiple Access (CDMA) transmitting apparatus for transmitting bipolar data, comprising: an optical CDMA encoding means for encoding a light from the outside into a code and a complement code of the code to generate an encoded light into the code and an encoded light into the complement code (fig. 1a, element 104 and paragraphs 0030-0034); and an optical modulation means for selecting and transmitting one of the encoded lights into the code and the complement code of the code based on the polarity (`0` or `1`) of the data inputted from the outside (fig. 1a, element 112 and paragraphs 0030-0034, 0038 and 0039).

Regarding claim 4, Izadpanah discloses the optical CDMA transmitting apparatus as recited in claim 1, wherein the optical CDMA encoder performs encoding by using filters having an assignment of wavelengths for the light to be reflected or to be transmitted based on a modified pseudo-noise code (paragraphs 0054 and claim 9).

Regarding claim 11, Izadpanah discloses an optical CDMA transmitting method used in an optical CDMA transmitting apparatus for transmitting bipolar data, comprising the steps of: a) encoding a light into a code or a complement code of the code; and b) transmitting the encoded light into the code or the complement code based on the polarity (`0` or `1`) of data to be transmitted by using one optical modulator (fig. 1a and paragraphs 0030-0034).

Regarding claim 12, Izadpanah discloses the optical CDMA transmitting method as recited in claim 11, wherein the step of encoding the light into the code or the complement code is performed by using filters having an assignment of wavelengths for the lights to be reflected or to be transmitted based on a modified pseudo-noise code (paragraphs 0054 and claim 9).

5. Claims 5, 8, 11 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lam et al. ("Lam") ("Experimental demonstration of bipolar optical CDMA system using a balanced

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transmitter and complementary spectral encoding"; Lam et al.; Photonics Technology Letters, IEEE; Volume 10, Issue 10, Oct 1998, pages: 1504-1506.).

Regarding claim 5, Lam discloses an optical CDMA transmitting apparatus for transmitting bipolar data, comprising: an optical modulation means for outputting a light from the outside through a different output terminal based on the polarity ('0' or '1') of data inputted from the outside (fig. 1a and page 1504, col. 2); and an optical CDMA encoding means for receiving the light outputted from a first output terminal of the optical modulation means, and encoding the light into a code and receiving the light outputted from a second output terminal of the optical modulation means, and encoding the light into a complement code of the code (figs. 1a and 1b and page 1504, col. 2).

Regarding claim 8, Lam discloses an optical CDMA transmitting apparatus for transmitting bipolar data, comprising: a first light source, which is turned on based on data inputted from the outside, for outputting a light and a second light source, which is turned on in opposition to the first light source, for outputting a light (fig. 1a and page 1504, col. 2); and an optical CDMA encoding means for receiving the light outputted from the second light source, encoding the light into a code, or receiving the light outputted from the first light source, encoding the light into a complement code of the code, and then transmitting the code or the complement code (figs. 1a and 1b and page 1504, col. 2).

Regarding claim 11, Lam discloses an optical CDMA transmitting method used in an optical CDMA transmitting apparatus for transmitting bipolar data, comprising the steps of: a) encoding a light into a code or a complement code of the code; and b) transmitting the encoded light into the code or the complement code based on the polarity ('0' or '1') of data to be transmitted by using one optical modulator (fig. 1b and page 1504 col. 2).

Regarding claim 15, Lam discloses an optical CDMA transmitting method used in an optical CDMA transmitting apparatus for transmitting bipolar data, comprising the steps of: a) outputting a first light by turning on a first light source based on data to be transmitted and b) outputting a second light by turning on a second light source in opposition to the step a) based on the data to be transmitted (fig. 1a and page 1504, col. 2); and c) encoding the second light into a code, and encoding the first light into a complement code of the code, and then transmitting the encoded light into the code or the complement code (figs. 1a and 1b and page 1504, col. 2).

6. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Dutt et al. ("Dutt") (US Patent No. 6236483).

Regarding claim 13, Dutt discloses an optical CDMA transmitting method used in an optical CDMA transmitting apparatus for transmitting bipolar data, comprising the steps of: a) outputting a light through a different output terminal based on the polarity ('0' or '1') of data to be transmitted (fig. 12a, element 246 and col. 15, lines 8-21), and b) encoding the light outputted through a first output terminal into a code between the lights outputted in the step a), and encoding the light outputted through a second output terminal into a complement code of the code among the lights outputted in the step a), and then transmitting the encoded light into the code or the complement code (fig. 12a, elements 242, 244 and 250 and col. 15, lines 8-21).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7, 10, 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lam ("Experimental demonstration of bipolar optical CDMA system using a balanced transmitter and complementary spectral encoding"; Lam et al.; Photonics Technology Letters, IEEE; Volume 10, Issue 10, Oct 1998, pages: 1504-1506.) in view of Kartalopoulos ("Introduction to DWDM Technology"; IEEE Press, 2000, pages 142-144), and further in view of Dafesh (US Patent Application Publication No. 2004/0208233).

Regarding claims 7, 10, 12, and 16, Lam discloses the optical CDMA transmitting apparatus and method as recited in claims 5, 8, 11 and 15, but does not disclose that the optical CDMA encoders perform encoding by using filters having an assignment of wavelengths for the light to be reflected or to be transmitted based on a modified pseudo-noise code. Kartalopoulos discloses reflective NxN optical switches based on MEMS (pages 142-144, section 10.6). It would have been obvious to one of ordinary skill in the art at the time of the invention to use MEMS switches for the 2x2 switches in the WDM system of Lam, to provide the benefit of low-loss connectivity and compact design as taught by Kartalopoulos. Dafesh discloses optical CDMA and discloses advantages of CDMA coding that is based on cryptographically varied pseudorandom spreading codes (paragraphs 0003-0007). It would have been obvious to one of ordinary skill in the art at the time of the invention to base the CDMA coding of Lam on cryptographically varied pseudorandom spreading codes, to provide the benefit of inherently secure transmission, as taught by Dafesh.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dutt (US Patent No. 6236483) in view of Dafesh (US Patent Application Publication No. 2004/0208233).

Regarding claim 14, Dutt discloses the optical CDMA transmitting method as recited in claim 13, and discloses that the step of encoding the light into the code and the complement code is performed by using filters having an assignment of wavelengths for the light to be reflected or to be transmitted (fig. 12a, elements 242 and 244 and col. 15, lines 33-62), but does not disclose that the step of encoding the light is based on a modified pseudo-noise code. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Dafesh with Lam as described above for claims 7, 10, 12 and 16.

Allowable Subject Matter

10. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: in claim 2, the claimed arrangement of the circulator and FBG filters with respect to the modulator, and encoding the code and complement code, was not found in the prior art.

11. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: in claim 3, the claimed arrangement of the circulator, first and second diffraction gratings and spatial filter for generating the code and complement code signals was not found in the prior art.

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12. Claims 6 and 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and if claim 9 was rewritten to overcome the 112-2nd paragraph rejection.


The following is a statement of reasons for the indication of allowable subject matter: in claims 6 and 9, the claimed arrangements of the circulator and FBG filters for encoding the code and complement code using forward and reverse directions was not found in the prior art.

Conclusion

13. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pairedirect.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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